

Appl. No. 09/607,815  
Amdt. Dated August 18, 2005  
Reply to Office Action of May 17, 2005

**Listing of the Claims:**

1. (Currently Amended) A method of operating a processor to repeatedly execute an instruction, comprising:

determining at run time how many times a single instruction is to be repeated;  
loading at run time an existing general purpose register with a count value  
indicative of the number of times a single instruction is to be executed;  
fetching and executing a REPEAT instruction, the REPEAT instruction  
indicating the single instruction to be repeatedly re-executed;  
fetching the single instruction; and  
repeatedly executing the single instruction for a consecutive number of times as  
indicated by the count value without refetching the single instruction and without adding a  
NOP (no operation) instruction.

2. (Currently Amended) A method of operating a processor to repeatedly execute an instruction comprising:

fetching a REPEAT instruction;  
executing a REPEAT instruction, wherein execution of the REPEAT  
instruction determines and stores at run time in an existing general purpose register a count  
value indicative of the number of times a single instruction is to be executed;  
fetching the single instruction; and  
repeatedly executing the single instruction consecutively for as many times as  
indicated by the count value without re-fetching the single instruction and without fetching  
any other instruction and without adding a NOP (no operation) instructions;  
decrementing the count value in the register each time the single instruction is  
executed; and  
incrementing a program counter once the count value in the register is one of  
less than zero and equal to zero, thereby providing an effective data rate of one transfer every  
clock cycle.

Appl. No. 09/607,815  
Amdt. Dated August 18, 2005  
Reply to Office Action of May 17, 2005

3. (Currently Amended) A method of operating a processor to repeatedly execute an instruction comprising:

determining at run time a count value indicative of how many times a single instruction is to be repeated;

loading at run time a general purpose register with [[a]]the count value indicative of the number of times a single instruction is to be executed;

fetching and executing a REPEAT instruction indicating the single instruction that is to be repeatedly executed;

incrementing a program counter;

fetching the single instruction;

repeatedly executing the single instruction for as many times as indicated by the count value stored in the register without refetching the single instruction and without fetching any other instruction and without adding a NOP (no operation) instruction;

decrementing the count value stored in the register each time the single instruction is executed; and

stalling the program counter until the count value in the register is one of less than zero and equal to zero, thereby providing an effective data rate of one transfer every clock cycle.

4. (Original) A method of operating a processor according to claim 3, wherein said count value is stored in said count register before execution of said REPEAT instruction.

5. (Cancelled)

6. (Original) A method of operating a processor according to claim 3, wherein said method further comprises:

incrementing the program counter after the single instruction has been executed

Appl. No. 09/607,815  
Amdt. Dated August 18, 2005  
Reply to Office Action of May 17, 2005

for as many times as indicated by the count value.

7. (Original) A method according to claim 3, wherein method further comprises:

decrementing said count value stored in said register each time said single instruction is executed; and

determining whether said count value is less than or equal to zero.

8. (Currently Amended) A processor for repeatedly executing a single instruction, said processor comprising:

means for determining at run time a count value indicative of how many times a single instruction is to be repeated;

means for loading at run time a general purpose register with [[a]]the count value indicative of the number of times the single instruction is to be executed;

means for fetching a REPEAT instruction, the REPEAT instruction indicating the single instruction to be repeatedly executed;

means for executing the REPEAT instruction indicating the single instruction to be repeatedly executed;

means for fetching the single instruction; and

means for repeatedly executing the single instruction a consecutive number of times as indicated by the count value without refetching the single instruction without adding a NOP (no operation) instruction.

9. (Currently Amended) A processor for repeatedly executing an instruction, comprising:

means for determining at run time how many times a single instruction is to be repeated;

means for fetching a REPEAT instruction;

Appl. No. 09/607,815  
Amdt. Dated August 18, 2005  
Reply to Office Action of May 17, 2005

means for executing a REPEAT instruction, wherein execution of the REPEAT instruction at run time stores in a general purpose register a count value indicative of the number of times a single instruction is to be executed;

means for fetching the single instruction;

means for repeatedly executing the single instruction for as many times as indicated by the count value without re-fetching the single instruction and without fetching any other instruction without adding a NOP (no operation) instruction;

means for decrementing the count value in the register each time the single instruction is executed; and

means for incrementing a program counter once the count value in the register is less than zero, thereby providing an effective data rate of one transfer every clock cycle.

10. (Currently Amended) A processor for repeatedly executing an instruction, comprising:

means for determining at run time how many times a single instruction is to be repeated;

means for loading a general purpose register at run time with a count value indicative of the number of times a single instruction is to be executed;

means for fetching a REPEAT instruction indicating the single instruction that is to be repeatedly executed;

means for executing the REPEAT instruction indicating the single instruction that is to be repeatedly executed without adding a NOP (no operation) instruction;

means for incrementing a program counter;

means for fetching the single instruction; and

means for repeatedly executing the single instruction for a consecutive number of times as indicated by a count value stored in a count register without refetching the single instruction and without fetching any other instruction;

means for decrementing the count value stored in the register each time the

Appl. No. 09/607,815  
Amdt. Dated August 18, 2005  
Reply to Office Action of May 17, 2005

single instruction is executed; and

means for means for incrementing a program counter once the count value in the register is equal to zero, thereby providing an effective data rate of one transfer every clock cycle.

11. (Original) A processor according to claim 10, wherein said count value is stored in said count register before execution of said REPEAT instruction.

12. (Cancelled)

13. (Original) A processor according to claim 10, wherein said processor further comprises:

means for incrementing the program counter after the single instruction has been executed for as many times as indicated by the count value.

14. (Currently Amended) A processor according to claim 10, wherein the processor further comprises:

means for decrementing said count value stored in said register each time the single instruction is executed; and

means for determining whether said count value is less than or equal to zero.

15. (Currently Amended) A processor for repeatedly executing one or more processor instructions, said processor comprising:

a memory address register associated with a main memory;

a memory data register associated with the main memory;

a memory control for generating memory control signals;

a program counter for storing a memory address location of the main memory

where an instruction is to be fetched;

an instruction register for storing an instruction that is to be executed;

Appl. No. 09/607,815  
Amdt. Dated August 18, 2005  
Reply to Office Action of May 17, 2005

at least one general purpose register for storing a count;  
decode and execute control logic for decoding and executing an instruction  
stored in the instruction register; and  
a state machine for controlling the fetching and repeated execution of a single  
instruction, the state machine configured to repeatedly execute the single instruction by  
signaling the instruction register to hold the same instruction and not fetch the next  
instruction without refetching the single instruction and to decrement the count stored in the  
general purpose register each time the single instruction is executed, and to signal the program  
counter not to increment until increment the program counter once the count stored in the  
general purpose register is below a threshold value, thereby providing an effective data rate of  
one transfer every clock cycle.

16. (Cancelled)

17. (Original) A processor according to claim 15, wherein said general  
purpose register includes a first register for storing a count value indicative of the number of  
times the single instruction is to be repeatedly executed.

18. (Original) A processor according to claim 17, wherein said state  
machine generates signals for decrementing the count value stored in the first register.

Claims 19-22 (Cancelled)

23. (Currently Amended) ~~The method of operating a processor to~~  
~~repeatedly execute an instruction of claim 15, further comprising wherein the state machine~~  
is configured to increment ~~the program counter once the count value is equal to zero.~~

Appl. No. 09/607,815  
Amdt. Dated August 18, 2005  
Reply to Office Action of May 17, 2005

24. (Currently Amended) ~~The method of operating a processor to repeatedly execute an instruction of claim 15, further comprising the state machine configured to increment[[ed]] the program counter once the count value is less than zero.~~

25. (Cancelled)

26. (Previously Presented) The processor for repeatedly executing a single instruction of claim 8, further comprising means for incrementing a program counter once the count value is equal to zero.

27. (Previously Presented) The processor for repeatedly executing a single instruction of claim 8, further comprising means for incrementing a program counter once the count value is less than zero.

28. (Previously Presented) The processor for repeatedly executing a single instruction of claim 8, wherein a program counter remains unchanged as the single instruction is repeatedly executed.

29. (Previously Presented) The method of operating a processor to repeatedly execute an instruction of claim 2, wherein the program counter remains unchanged as the single instruction is repeatedly executed.

30. (Previously Presented) The method of operating a processor to repeatedly execute an instruction of claim 2, wherein the program counter is effectively stalled on the single instruction.

Appl. No. 09/607,815  
Amdt. Dated August 18, 2005  
Reply to Office Action of May 17, 2005

31. (Previously Presented) The method of operating a processor to repeatedly execute an instruction of claim 3, wherein the program counter remains unchanged as the single instruction is repeatedly executed.

32. (Previously Presented) The method of operating a processor to repeatedly execute an instruction of claim 3, wherein the program counter is effectively stalled on the single instruction until the single instruction executes the number of times indicated by the count value.